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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,844	03/29/2004	Darren Kenneth Rogers	07620009C2	9117

48642 7590 04/02/2007  
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EXAMINER
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KRISHNAN, MALINI

ART UNIT	PAPER NUMBER
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1714

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/02/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/810,844

Applicant(s)

ROGERS ET AL.

Examiner

Malini Krishnan

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 37-53 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

1. The amendment filed March 18, 2007 has been received and claims 37-53 are pending. All outstanding objections and rejections are withdrawn in light of applicant's amendment.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. The new grounds of rejection set forth below are necessitated by applicant's amendment filed on March 18, 2007. In particular, claims 37-53 are new. The claims include matter not included previously, and therefore are being presented for the first time after an action on the merits was sent. Thus, the following action is properly made final.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 37-39, and 42-45 are rejected under 35 U.S.C. 102(e) as being anticipated by Joseph ('470).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it

constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Joseph discloses a thermal protection system, which comprises a carbon foam. The carbon foam has an open-cell carbon structure, is produced from semi-crystalline coal-based materials, and has a density of from about 0.1 g/cm<sup>3</sup> to about 0.8 g/cm<sup>3</sup> (col. 3, lines 12-53). The open celled carbon foams can be impregnated with a petroleum pitch, epoxy resins or other polymers (col. 5, lines 59-65). Additionally, the carbon foam comprises a carbide, such as silicon carbide, that is reactively bonded to the carbon foam as an antioxidant protective layer (col. 7, lines 1-20). A surface of the foam is also sealed in order to improve its adhesive or joining capabilities (col. 5, lines 16-25). Although there is no mention of abrasive applications, it is the examiner's position that due to the physical properties and porous structure, the foam would inherently be capable of being used for abrasive applications, and thus categorized as an abrasive foam.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been

obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 48-50, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph.

The discussion of Joseph in paragraph 5 above is herein incorporated by reference.

Joseph does not disclose the relative amount, 1 to about 10% by volume, of reaction bonded carbide included in the foam.

It is the examiner's position that the amount of carbide utilized is a result effective variable because changing it would clearly affect the type of product obtained. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In view of this, it would have been obvious to one of ordinary skill in the art to utilize a suitable amount of carbide, including those within the scope of the present claims, so as to produce desired end results. The amount of carbide

included in Joseph would be chosen so that the desired protective layer formed by the carbide would be produced.

9. Claims 41, 47, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph in view of Kuzurman (Foam Materials Based on Silicon and Titanium Carbides).

The discussions of Joseph in paragraphs 5 and 8 above are herein incorporated by reference.

Joseph is silent with respect to the carbide being titanium carbide.

Kuzurman discloses a porous foam produced by mixing carbon particles, binder, and finely dispersed powders of silicon or titanium into an initial mixture, and carbonizing and carbidizing the mixture. Therefore, it is the examiner's position that the foam disclosed includes a titanium or silicon carbide reactively bonded (paragraph 2).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to combine the teachings of Joseph and Kuzurman. Motivation lies in the fact that Joseph's foam includes generic carbide, whereupon Kuzurman's specific titanium carbide would read.

10. Claims 40, 46, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joseph in view of Googin ('440)

The disclosure of Joseph in paragraph 4 above is herein incorporated by reference.

Joseph is silent with respect to the carbide being tungsten carbide.

Googin discloses a foam comprising reactively bonded tungsten carbide (claims 6-10).

It would have been obvious to one of ordinary skill in the art at the time of application to combine the teachings of Joseph and Googin. Motivation lies in the fact that Joseph's foam includes a generic carbide, whereupon Googin's specific tungsten carbide would read.

### ***Response to Arguments***

11. Applicant's arguments with respect to claim 36 have been considered but are moot in view of the new ground(s) of rejection.

12. With respect to the extent that reference ULTRAFOAM would be applied to claims 37-53, applicant argues that reference fails to provide "impregnation with a polymer or petroleum pitch" as well as a semi-crystalline porous coal-based structure having about 1 to 10% by volume of reactively bonded carbide. The examiner agrees and has therefore provided new grounds of rejection as set forth above.

### ***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Malini Krishnan whose telephone number is 571-272-6519. The examiner can normally be reached on Monday through Friday, 8:00 am - 5:00 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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